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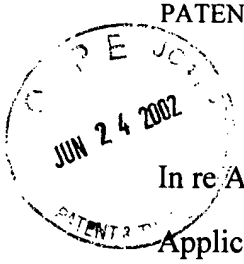

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Richards et al.

Art Unit: 2834

Application No. 10/033,353

Filed: October 25, 2001

For: PIEZOELECTRIC MICRO-TRANSDUCERS, METHODS OF USE AND MANUFACTURING METHODS FOR SAME

Examiner: Thomas Dougherty

Date: June 17, 2002

CERTIFICATE OF MAILING

I hereby certify that this paper and the documents referred to as being attached or enclosed herewith are being deposited with the United States Postal Service on June 17, 2002 as First Class Mail in an envelope addressed to: BOX NON-FEE AMENDMENT, COMMISSIONER FOR PATENTS, WASHINGTON, D.C. 20231.

Attorney for Applicant

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RESPONSE TO RESTRICTION REQUIREMENT

This responds to the Restriction Requirement dated May 16, 2002. Applicants elect with traverse claims 1-21 for prosecution. Applicants reserve the right to file continuing applications directed toward the non-elected claims.

REMARKS

Applicants have elected with traverse claims 1-21 for prosecution in the present application. In addition, for at least the following reasons, Applicants believe that at least Groups I, II, and III should be examined in the present application.

I. Groups I and II

The Office action contends that the inventions of Groups I and II, related as a product and a process for making the product, are distinct because the process allegedly can be used to make another and materially different product, such as a sensor. Applicants disagree.

Group I (claims 1-21) is directed toward a piezoelectric micro-transducer (the "product") and Group II (claims 22-33) is directed toward a method of making a piezoelectric micro-transducer (the "process for making the product"). As Applicants' attorney discussed with the Examiner in a telephone conference on May 29, 2002, the product of claims 1-21 and the process of claim 22-33 are not distinct for the reason provided by the Examiner because in some applications the claimed product could be used as a sensor. In other words, the product and process are not distinct because the product itself (i.e., a sensor) is the same as the product produced by the process (i.e., a sensor).

For example, claim 1 recites a micro-transducer having a fluid cavity cooperatively formed between a first membrane and a second membrane, with the second membrane having a piezoelectric member. In particular embodiments, the micro-transducer of claim 1 can be used as a micro-heat engine, such as recited in claim 2, or as a micro-heat pump, such as recited in claim 4. As a micro-heat engine, the micro-transducer converts heat energy to electrical energy.

Using the same principles, the micro-transducer also could be used as a heat sensor for sensing the presence of a high temperature, in which case an output signal could be provided in the form of an electrical charge in response to sensing a high temperature. Alternatively, the micro-transducer could be used as a sensor for sensing the presence of an electric current, in which case an output signal could be provided in the form of mechanical motion or heat energy. As evidenced by these examples, the product (Group I) and the process for making the product (Group II) are not distinct.

Accordingly, for at least the foregoing reasons, Applicants request the Restriction Requirement be removed with respect to Groups I and II.

II. Groups I and III

The Office action contends that the inventions of Groups I and III, related as a product and a process of using the product, are distinct because the process as claimed allegedly can be practiced with a materially different product, such as a solenoid. Applicants disagree.

Group III (claims 34-40) is directed toward a method for generating electricity with a piezoelectric micro-transducer. The independent claim of Group III, claim 34, recites a method that includes introducing a fluid into a chamber of the micro-transducer and expanding the fluid to cause a piezoelectric generator to generate electrical energy. As explained below, this method cannot be practiced with a solenoid.

A solenoid typically is used to activate a valve or a switch. A conventional solenoid has a coil of wire concentrically disposed about a movable core, which is configured to move axially with respect to the coil when a current is flowed through the coil. In this manner, the solenoid converts an electrical current into linear movement of the core. Unlike the claimed method, solenoids do not have a chamber for receiving and expanding a fluid and do not generate electrical energy.

Further, the particular example of a materially different product for practicing the claimed process given by the Office action to support the restriction of Groups I and III (i.e., a solenoid having a chamber for receiving a fluid and operable to generate electricity by expanding the fluid) is fantastic and has no basis in fact or reality. The Patent and Trademark Office will not search prior art directed to such a device because it does not exist.

Accordingly, for at least the foregoing reasons, the Restriction Requirement should be removed as to Groups I and III.

II. Groups II and III

The Office action contends that the inventions of Group II and III are unrelated because "the method to construct of Group II is not to construct the devices of Group III." Applicants disagree.

First, the inventions cannot be unrelated. This is because if Groups I and II are related as a product and a process for making the product (as stated on page 2 of the Office action), and Groups I and III are related as a product and process of use (as stated on page 3 of the Office action), then certainly Groups II and III also must be related.

Second, as noted above, Group II is directed toward a method of making a *piezoelectric micro-transducer*, and Group III is directed toward a method for generating electricity with a *piezoelectric micro-transducer*. Clearly, the method of Group II could be used to make the device recited in Group III.

Accordingly, for at least the foregoing reasons, Applicants believe that at least Groups I, II and III should be examined in the present application. The Examiner is invited to call the undersigned if there are any issues remaining concerning this matter.

Respectfully submitted,

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